Doc. No. 78-3922-01

Installing or Replacing the DRAM SIMM in Cisco 1600 Series Routers

Text Part Number: 78-3922-01

Cisco Product Numbers:
MEM1600-2D=
MEM1600-4D=
MEM1600-8D=
MEM1600-16D=
CPA016-MEM2D=
CPA016-MEM4D=
CPA016-MEM8D=
CPA016-MEM16D=

This document describes how to install or replace the dynamic random-access memory (DRAM) single in-line memory module (SIMM) in Cisco 1600 series routers. You might need to upgrade the DRAM SIMM for some Cisco Internetwork Operating System (Cisco IOS) feature sets or if the router is storing large routing or spoofing tables.

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Tools and Equipment Required

The following tools are required to upgrade the router's DRAM SIMM:

- Number 1 Phillips screwdriver
- One DRAM SIMM

Table 1 lists the DRAM SIMMs available for Cisco 1600 series routers.

Table 1 DRAM SIMMs for Cisco 1600 Series Routers

Cisco Product Number	Amount of DRAM
MEM1600-2D= CPA016-MEM2D=	2 MB
MEM1600-4D= CPA016-MEM4D=	4 MB
MEM1600-8D= CPA016-MEM8D=	8 MB
MEM1600-16D= CPA016-MEM16D=	16 MB

Note The DRAM SIMMs listed in Table 1 are nonparity SIMMs. You can install a parity SIMM in the router; however, doing so will disable the 2 MB of DRAM that is stored on the fixed memory chips in the router.

Preventing Electrostatic Discharge Damage

Before installing a DRAM SIMM, read the electrostatic discharge (ESD) instructions in this section to prevent damage to the equipment. ESD is a discharge of stored static electricity that can damage equipment and impair electrical circuitry. It occurs when electronic components are improperly handled and can result in complete or intermittent failures.

Following are guidelines for preventing ESD damage:

- Before opening the chassis, ensure that power to the router is off. Disconnect the power cable to turn off power to the router.
- Always use an ESD-preventive wrist or ankle strap and ensure that it makes good skin contact.
- Avoid contact between equipment and clothing. The wrist or ankle strap only protects the equipment from ESD voltages on the body; ESD voltages on clothing can still cause damage.
- Handle printed circuit cards by the edges only; avoid touching the components, traces, or any connector pins.
- Place a removed card component side up on an antistatic surface or in a static shielding bag.
- Do not remove the wrist or ankle strap until the installation is complete.

Caution To avoid damaging the equipment, periodically check the resistance value of the antistatic strap. The measurement should be between 1 and 10 megohms (Mohms).

Removing the Router Cover

Take the following steps to remove the router cover:

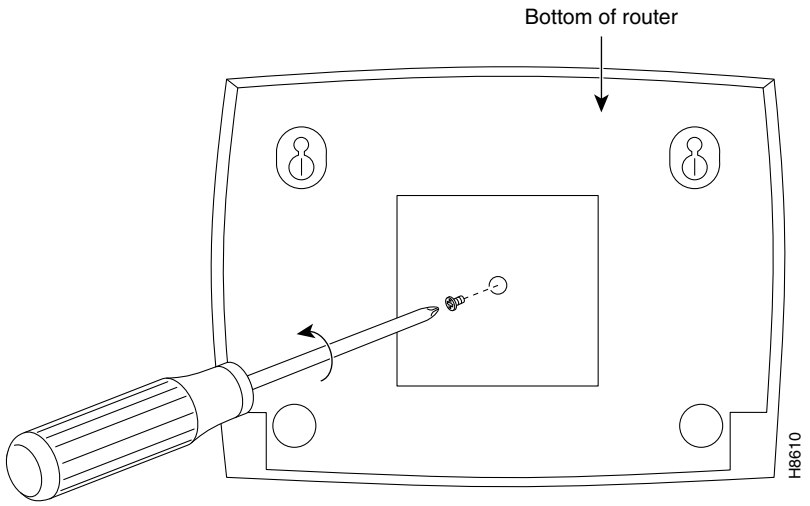
Step 1 Turn OFF the power by pressing the power switch on the rear panel to the off (O) position.

Step 2 Disconnect all cables from the rear panel.

Step 3 Place the router upside down a flat, secure surface, such as a desk or table.

Step 4 Using the Phillips screwdriver, remove the screw at the center of the underside of the router, as shown in Figure 1. Put the screw in a safe place.

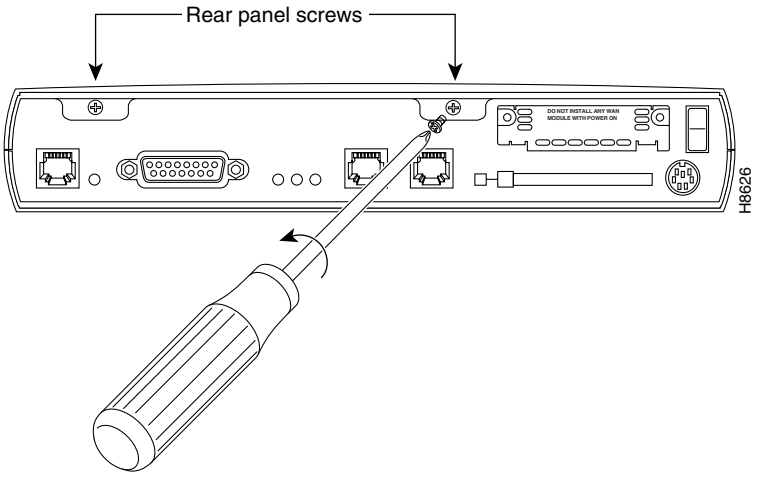
Figure 1 Removing the Screw from the Bottom of the Router



Step 5 Using both hands to hold the top and bottom of the router together, turn the router over so that it is right side up on the flat surface and the rear panel is facing toward you.

Step 6 Using the Phillips screwdriver, remove the two screws from the rear panel of the router, as shown in Figure 2. Put the screws in a safe place.

Figure 2 Removing the Screws from the Rear Panel

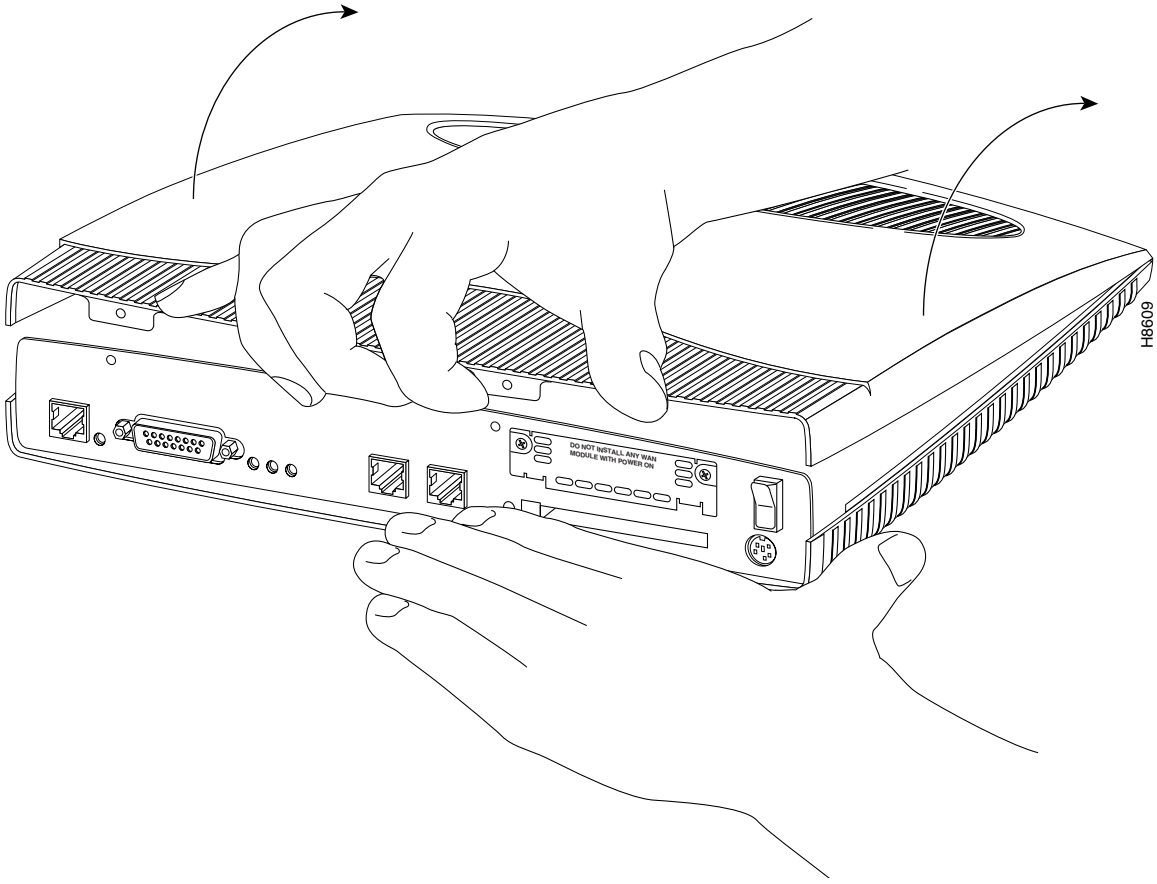


Step 7 Turn the router so that the rear panel is facing away from you, then use one hand to hold the bottom half of the router in place on the flat surface, as shown in Figure 3.

Step 8 Place the other hand on top of the router. With your fingers, grasp the lip of the cover that hangs over the rear panel of the router and gently pull the cover up and away from the bottom section of the router. (See Figure 3.)

Set the router cover in a safe place.

Figure 3 Removing the Router Cover



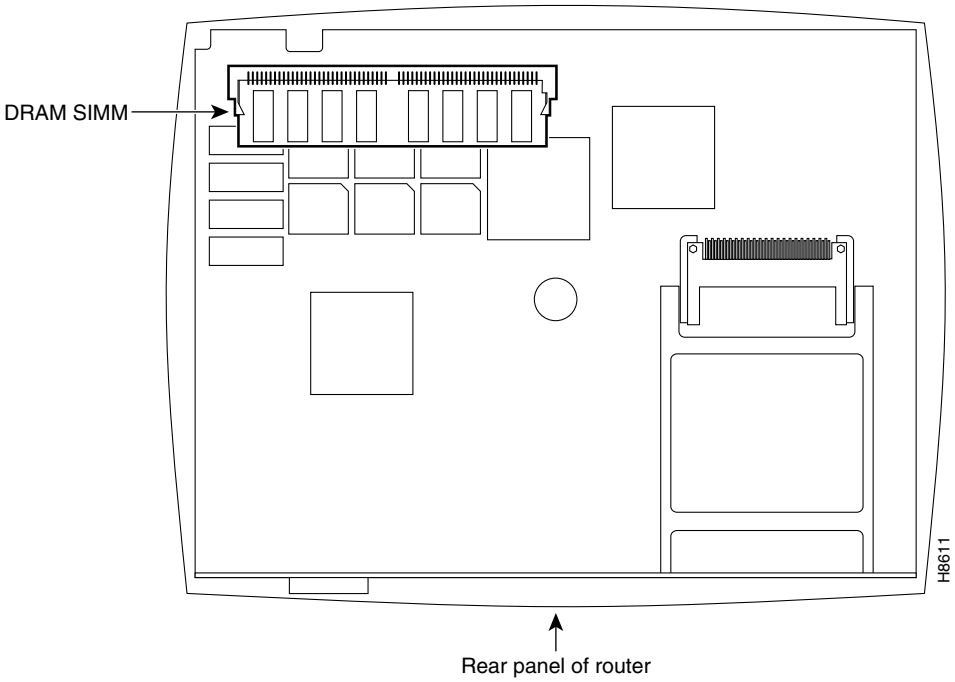
Proceed with the next section, “Installing or Replacing the DRAM SIMM.”

Installing or Replacing the DRAM SIMM

Take the following steps to install or replace the DRAM SIMM:

Step 1 If the router has a DRAM SIMM already installed, locate it on the system card. With the rear panel of the router facing you, the DRAM SIMM is located in the upper left corner of the system card, as shown in Figure 4. If there is no DRAM SIMM installed the router, proceed to Step 3 to install a DRAM SIMM in the location shown in Figure 4.

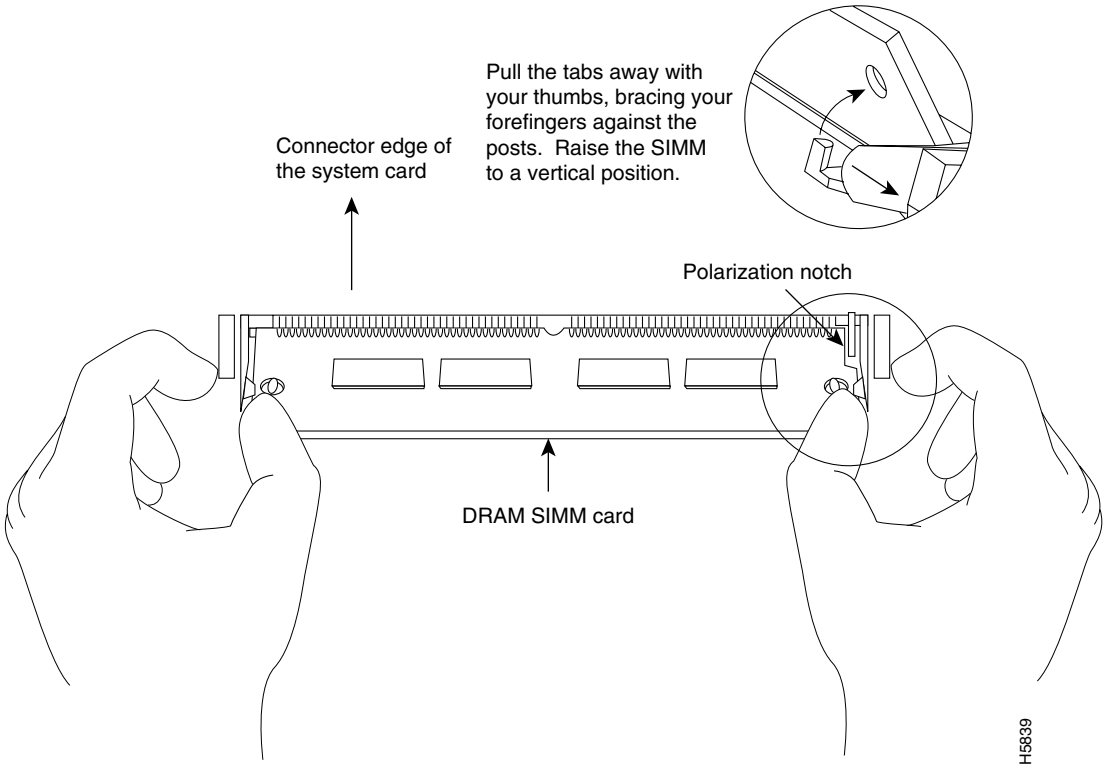
Figure 4 DRAM SIMM Location—Cisco 1600 Series Routers



Step 2 Remove any existing DRAM SIMM. While pulling outward on the tabs to unlatch them, raise the SIMM to the vertical position and remove it from the SIMM socket. (See Figure 5.)

Caution To prevent damage, do not push on the center of the DRAM SIMM. Handle the DRAM SIMM carefully.

Figure 5 Replacing the DRAM SIMM


Pull the tabs away with your thumbs, bracing your forefingers against the posts. Raise the SIMM to a vertical position.
Connector edge of the system card
Polarization notch
DRAM SIMM card
H5839

Step 3 With the rear panel of the router still facing you, position the new DRAM SIMM so that the polarization notch is located at the right end of the SIMM socket.

Caution To prevent damage, note that some DRAM SIMMs have the components mounted on the rear side; therefore, when you insert the SIMM, always use the polarization notch as a reference, *not* the position of the components on the SIMM.

Step 4 Insert the new DRAM SIMM by sliding the end with the metal fingers into the SIMM socket at approximately a 45-degree angle to the system card. Gently rock the SIMM back into place until the latch on either side snaps into place. Do not use excessive force because the connector could break.

Proceed with the next section "Replacing the Router Cover."

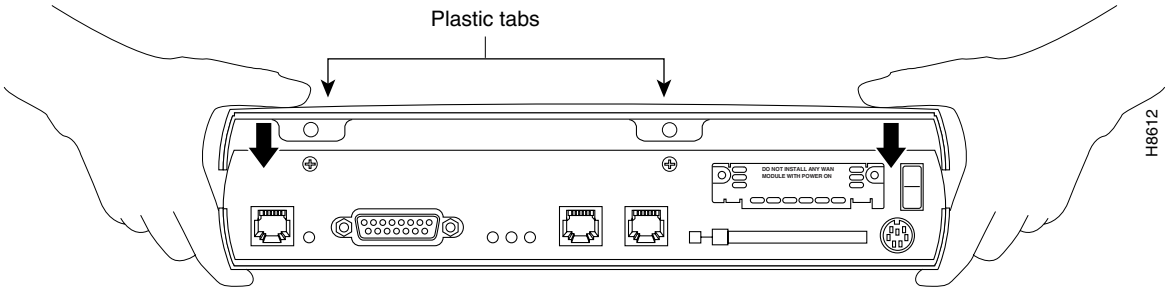
Replacing the Router Cover

Take the following steps to replace the router cover:

Step 1 Align the top and bottom sections of the router.

Step 2 Close the cover by slowly pressing the top and bottom sections together. (See Figure 6.)

Figure 6 Replacing the Cover



Step 3 Turn the router so that the rear panel is facing you, and replace the two screws that you removed from the rear panel earlier.

Step 4 Using both hands to hold the router top and bottom together, turn the router upside down so that the top of the router is resting on the flat surface. Replace the screw that you removed earlier from the underside of the router.

Step 5 Place the router right side up on the flat surface and reconnect all cables to the router.

Step 6 Turn ON the power by pressing the power switch to the on (|) position.

Proceed with the next section, "Checking the DRAM SIMM Installation."

Checking the DRAM SIMM Installation

After installing the DRAM SIMM, you should verify the installation by reading the messages the router displays when you power it on:

If the DRAM SIMM is installed correctly, a message similar to the following will be displayed:

```
Cisco Internetwork Operating System Software
IOS (tm) 1600 Software (C1600-Y-L), Version 11.1(16539)
Copyright (c) 1986-1996 by cisco Systems, Inc.
Compiled Tue 29-Oct-96 21:30 by xxxxx
Image text-base: 0x08019CB4, data-base: 0x02005000

cisco 1600 (68360) processor (revision C) with 9728K/512K bytes of memory.
Processor board ID 01335537
Bridging software.
X.25 software, Version 2.0, NET2, BFE and GOSIP compliant.
Basic Rate ISDN software, Version 1.0.
```

Notice that the display shown in bold text indicates how much main memory is installed in the router. In this example, the router has 10 MB of main memory—the memory stored in the DRAM SIMM (8 MB) plus the memory stored in the fixed memory chips (2 MB).

If the DRAM SIMM in not installed correctly or is defective, the memory amount stored in the DRAM SIMM is not reflected in the message display. In the following display, an 8 MB DRAM SIMM has been installed incorrectly in the router:

```
Cisco Internetwork Operating System Software
IOS (tm) 1600 Software (C1600-Y-L), Version 11.1(16539)
Copyright (c) 1986-1996 by cisco Systems, Inc.
Compiled Tue 29-Oct-96 21:30 by xxxxx
Image text-base: 0x08019CB4, data-base: 0x02005000

cisco 1600 (68360) processor (revision C) with 1536K/512K bytes of memory.
Processor board ID 01335537
Bridging software.
X.25 software, Version 2.0, NET2, BFE and GOSIP compliant.
Basic Rate ISDN software, Version 1.0.
```

Notice that the line listing the main memory (shown in bold) shows only the 2 MB of memory that is stored in the fixed memory chips.

If the DRAM SIMM memory is not reflected in the display, repeat the DRAM SIMM upgrade procedure to reinstall the DRAM SIMM. Make sure the DRAM SIMM is completely seated in the SIMM socket. If display still does not reflect the additional memory stored in the DRAM SIMM, the DRAM SIMM might be defective.

Obtaining Service and Support

For service and support for a product purchased from a reseller, contact the reseller. Resellers offer a wide variety of Cisco service and support programs, which are described in the section “Service and Support” in the information packet that shipped with your chassis.

Note If you purchased your product from a reseller, you can access Cisco Connection Online (CCO) as a guest. CCO is Cisco Systems’ primary, real-time support channel.Your reseller offers programs that include direct access to CCO’s services.

For service and support for a product purchased directly from Cisco, use CCO.

Cisco Connection Online

CCO is Cisco Systems’ primary, real-time support channel. SMARTnet customers and partners can self-register on CCO to obtain additional content and services.

Note If you purchased your product from a reseller, you can access CCO as a guest. Your reseller offers programs that include direct access to CCO’s services.

Available 24 hours a day, 7 days a week, CCO provides a wealth of standard and value-added services to Cisco’s customers and business partners. CCO services include product information, software updates, release notes, technical tips, the Bug Navigator, configuration notes, brochures, descriptions of service offerings, and download access to public and authorized files.

CCO serves a wide variety of users through two interfaces that are updated and enhanced simultaneously—a character-based version and a multimedia version that resides on the World Wide Web (WWW). The character-based CCO supports Zmodem, Kermit, Xmodem, FTP, and Internet e-mail, and is excellent for quick access to information over lower bandwidths. The WWW version of CCO provides richly formatted documents with photographs, figures, graphics, and video, as well as hyperlinks to related information.

You can access CCO in the following ways:

- WWW: http://www.cisco.com.
- WWW: http://www-europe.cisco.com.
- WWW: http://www-china.cisco.com.
- Telnet: cco.cisco.com.
- Modem: From North America, 408 526-8070; from Europe, 33 1 64 46 40 82. Use the following terminal settings: VT100 emulation; databits: 8; parity: none; stop bits: 1; and baud rates up to 14.4 kbps.

For a copy of CCO's Frequently Asked Questions (FAQ), contact cco-help@cisco.com. For additional information, contact cco-team@cisco.com.

Note If you need technical assistance with a Cisco product that is under warranty or covered by a Cisco maintenance contract, contact Cisco's Technical Assistance Center (TAC) at 800 553-2447, 408 526-7209, or tac@cisco.com.

Please use CCO to obtain general information about Cisco Systems, Cisco products, or upgrades. If CCO is not accessible, contact 800 553-6387, 408 526-7208, or cs-rep@cisco.com.

This document is to be used in conjunction with the *Cisco 1600 Series Router Installation and Configuration Guide* and the *NetBeyond Cisco 1600 Series Router Installation and Configuration Guide* publications.

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